

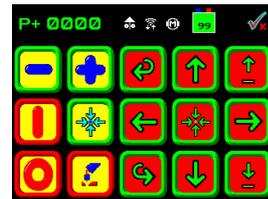
## smartRobot® -500-B Welding System

First wireless radio-controlled, universal automatic welding robot with up to 4 axes



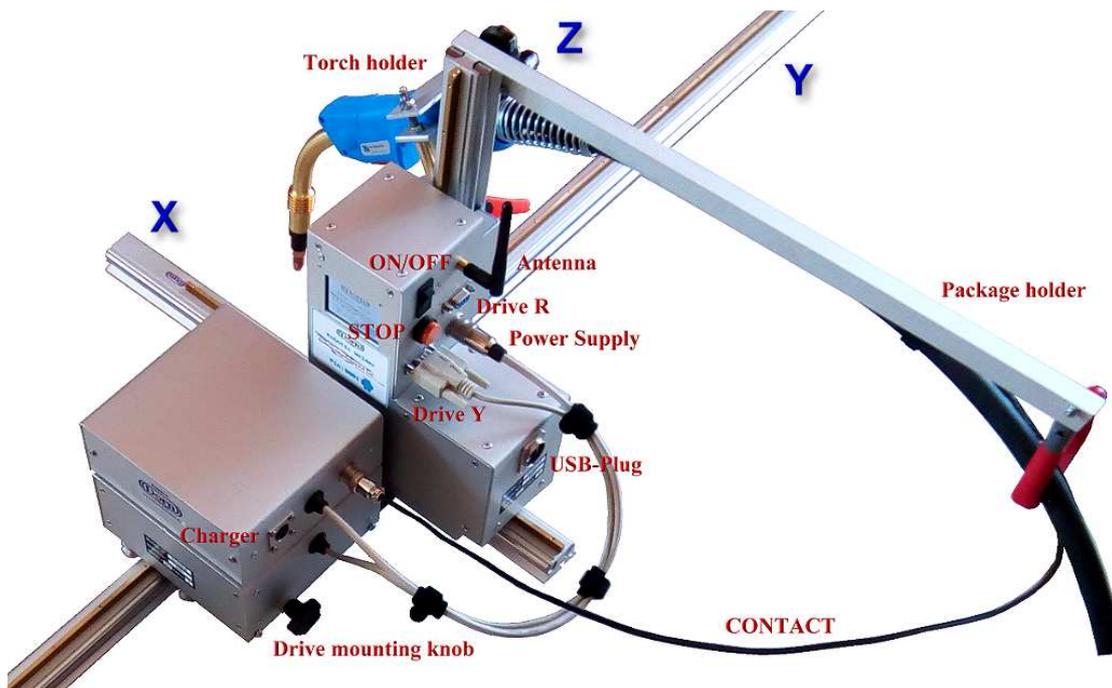
### smartRobot® -500-B Robotic Welder

Integrated TFT-Touch-Screen



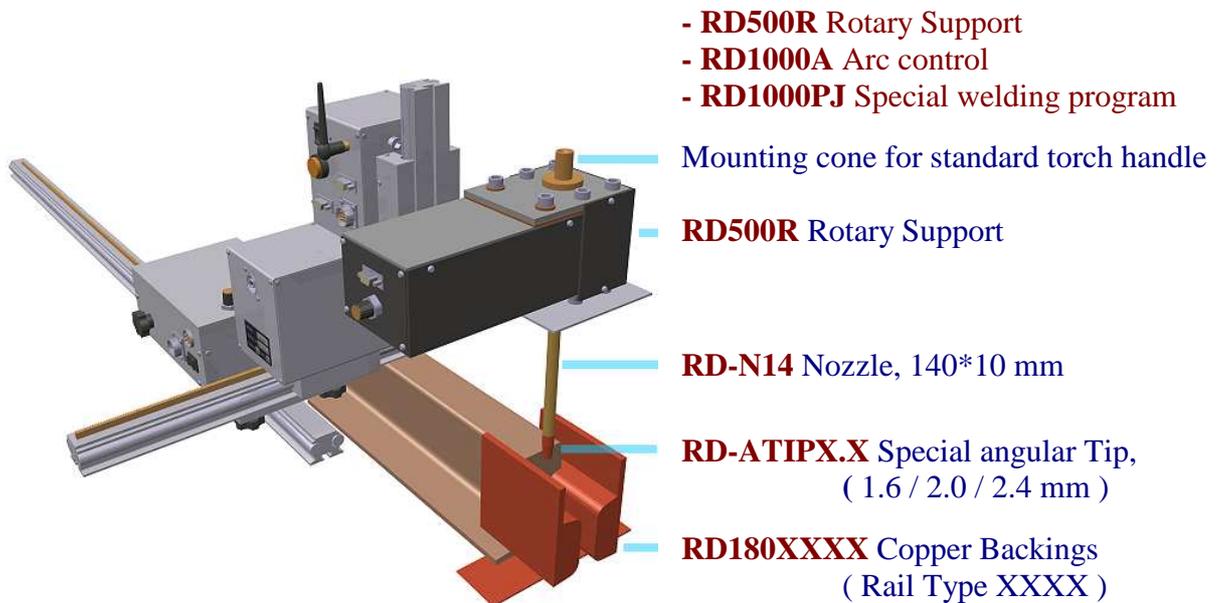
- Wire Feed-In
- Zero-Point Movement
- Position Adjustment
- START/STOP

### Overview



## + Parts for Joint Welding (J)

### Extension by collectable parts for 4-axes smartRobot®-500-BJ (Joint-Welder)



### Technical Data

**Power Supply** : prim. 100-240 VAC, sec. 2\*12 VDC/ 72W, Or : prim. 42 VAC, sec. 2\*12 VDC/ 72W

**Option** : Power Supply by chargeable Battery, 20Ah for approximately 10 hours of independent work.

**Battery Charger** : +12 VDC / 2A

**Motors XYZ** : DC-Motors, 12V/36W, 0 - 1800 mm/min, optional rotary support **R**: 60 RPM

**Motor Controls XYZR** : Linear regulated, with computer controlled fuse and speed adjustment.

**Mechanical Parts** : Ball- and Linear-Bearings, 8/12 mm hardened steel rails, worm gears and helical racks.  
Turn able torch holder, mounting knob for drive unit.

Mounting directly at work piece with clamps, magnets or screw able with screws M6.

**Computer** : 32-Bit ARM micro controller, multiple interfaces, USB, Serial, I<sup>2</sup>C, SPI, CAN ...

100% Quality-Management-System, future Operating System Update by USB-Connection.

**TFT Touch-Display** : 2.4 inch bright display, 320\*240 pixel resistive touch-screen, integrated SD-Card.

**Remote Pendant** : Quad-Core 64-Bit phone, 5.1 HD bright display, spatter protection foil, rubber cover.

**Connections** : Contact for switching the power source, Arc-Control, wireless and USB interface to PC.

**Amplitude** : 0 - 120 mm; **Oscillation Frequency** at 0.1mm amplitude : 25 Hz max.

**Movement** : Weaver **X**: 400 mm, Up/Down **Z**: 220 mm, Drive **Y**: 1300 mm, Rotary **R**: endless

**Encoder Resolution** : 0.106 mm, detected at gear output

**Dimension Unit** (without rails) : 350 mm \* 180 mm \* 230 mm

**Weight Welding Unit** : approximately 14 Kg

## Examples



### Standard-Surfacing

Area selection by Input-Points.  
Special Start-/End-Sequences for less tension of rail.



### Hard-Facing at manganese rails

Special Line-Sequences for best connection and wash out of dirt and slag.



Multi Area welds with automatic count-down timer for “cold” rail.

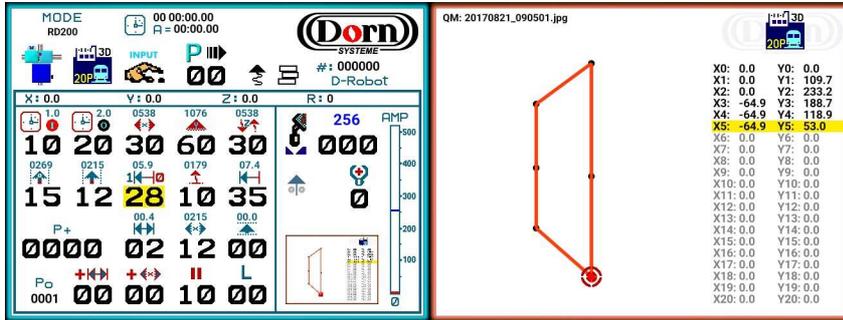
-possibly cooled down by water.

2 areas for best edges.



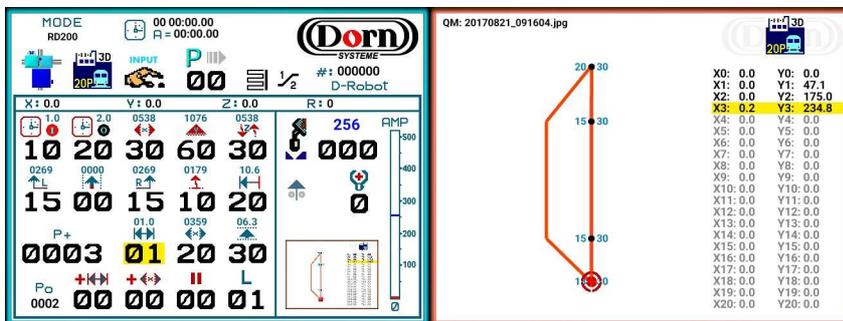
Special End-Sequences with overlapped areas.

## RDO-File Examples



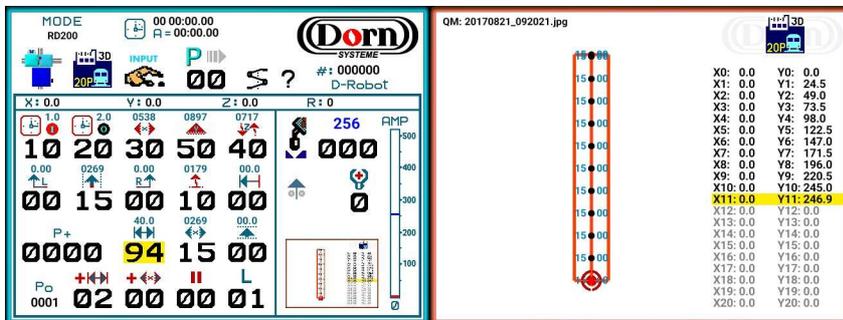
CMS-Defect.rdo

- fill area in Line-Mode.
- adjustable speed and distance between L0 and L1, use parameter distance , Mid-Speed: for L0.
- reset point P3 to length position of P2 to weld rail-end.



Rail-Defect.rdo

- fill area by amplitude and movement.
- reset amplitude at point P3 to same amount as at P2 to weld rail-end.



ZickZack.rdo

- create stainless line against oxidation and ensure electrical contact.
- use pattern and work-mode Auto-Teach-In for continuous drive.

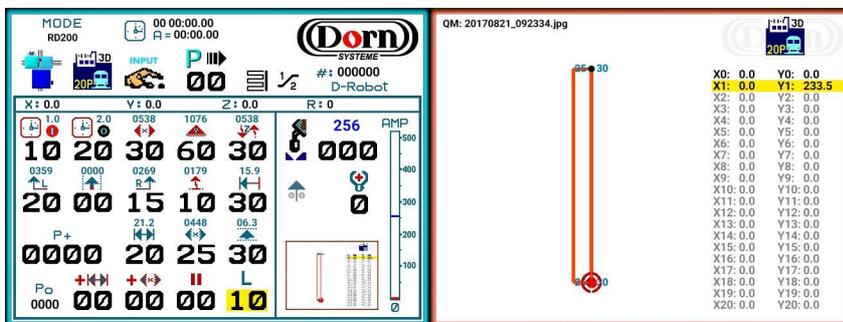


Plate-Surfacing.rdo

- set Multi-Area mode to repeat.
- set distance of area-overlap.
- set L for Line-Amount.
- set left/right speed for best overlap.

All rdo-files are included in zip-folder *Dorn\_Robot.zip* for download.

## Joint Welding



Variation with mounting at rail head.



Last layers surfaced with hard wire.

Welding from bottom to head without interruption.

Equally tempered scale and energy because of arc control and real-time stick-out adjustment.